

ORGANIZATION REPORT IN LIEU OF MONTHLY REPORT OF  
MALARIA CONTROL IN WAR AREAS

I. SYLLABUS

The program for malaria control in war areas commenced in March, 1942 and by June 30th had controlled mosquito production through the distribution of approximately 300,000 gallons of larvicide on 31 million feet of pooled ditch and 750 million square feet of pond. In addition, minor drainage had removed the necessity for larvicide distribution from 5 million feet of pooled stream and had cleared another 5 million feet and 44 million square feet of pond to make larvicide operations possible. This program utilized approximately one-half million man-hours.

Under Bureau orders of February 9, 1942 the office was set up as a part of the States Relations Division. Lacking space in Washington, the malaria section was transferred to Atlanta, Georgia, to develop as not only an administrative office but as an active operating field office for overall direction of the work. This program of Malaria Control in War Areas superseded the previous combination of operation by the Work Projects Administration through the State Boards of Health, with technical supervision supplied by the Public Health Service. The present plan includes direct project operation by each State Health Department, largely with personnel supplied by the Public Health Service. Supervision is exercised by the headquarters office in collaboration with the District Offices. Control work outside the military reservations is closely integrated with that carried on by the military inside the reservations. It is operated in toto by the Service and the States in the industrial war areas.

Control operations under the Atlanta office started on March 17, 1942, and by the end of the fiscal year projects employing more than 2600 men were in operation in 93 areas and 15 states, the District of Columbia, and Puerto Rico. These projects protected 450 war establishments (military, industrial, housing or recreational) involving several million military connected personnel. Approximately \$1,400,000 of Public Health Service funds were used in the fiscal year of 1942 for technical supervision of the WPA program and for direct operations in the last quarter.

During the fiscal year 1943 it is expected that about 60 additional war areas will be added to control operations. Expenditure for the fiscal year 1943 will exceed \$10,000,000 of which about \$6,350,000 is a Federal appropriation to the Public Health Service.

A project for controlling production of Aedes aegypti (dengue and yellow fever) has been inaugurated at Key West, Florida at the request of the Navy. Other projects will soon be developed in Texas and South Carolina. No obnoxious mosquito (pest) control projects are authorized although the Army, Navy, and Maritime Commission urgently request that the Public Health Service undertake such work in a few selected areas.

Plans have been perfected for making thick film blood indexes within and without controlled areas to obtain accurate data on the incidence of malaria. To reduce the incidence of malaria in rural areas outside the zone of mosquito protection around each war establishment, but within the areas frequented by troops and war workers, an educational program of experimental nature is in operation. This will be supplemented by insecticide destruction of house-frequenting, engorged, female Anopheles quadrimaculatus.

Considerable difficulty has been experienced in obtaining supplies and equipment, particularly trucks and cars. Shortages of automotive equipment have increased the difficulties of project operations and have somewhat reduced the efficiency of control measures.

TABLE NO. 1

MALARIA CONTROL IN WAR AREAS  
USPHS LARVICIDE AND MINOR DRAINAGE PROJECTS  
March 17 - June 30, 1942

State	Larvicidal Work				Other Work			Total Man Hours
	Larvicide Used		Surfaces Treated		Ditching and Cleaning Lin.Ft.	Clearing		
	Oil Gals.	Paris Green Lbs.	Ditches Lin.Ft.	Ponds Sq. Ft.		Ditches Lin.Ft.	Ponds Sq.Ft.	
Ala.	2,100	-----	12,000	4,889,000	18,800	33,400	9,740,620	18,254
Ark.	5,403	2,653	945,631	17,749,171	308,928	321,528	1,505,362	38,156
Fla.	22,177	8,293	1,203,669	169,907,095	387,424	642,531	1,741,457	61,231
Ga.	10	8,779	282,801	87,512,040	55,850	7,517	771,989	20,220
Ky.	4,495	1	430,620	18,254,180	28,186	23,410	330,260	10,274
La.	68,511	168	7,041,265	272,628,671	----	----	----	47,726
Miss.	19,048	-----	2,610,589	10,338,440	370,561	400,254	6,650,835	44,557
Mo.	-----	62	-----	1,618,460	13,575	13,575	379,700	3,660
N.C.	30,106	-----	7,033,274	61,824,880	293,914	666,562	10,615,994	63,335
Okla.	1,110	-----	21,060	1,802,410	93,858	54,895	234,660	10,829
S.C.*	63,222	-----	4,700,952	120,989,474	1,178,552	1,214,232	2,090,954	122,394
Tenn.	16,545	-----	2,812,222	12,028,478	158,000	33,300	279,610	13,595
Texas	27,800	255	2,805,229	30,120,164	299,085	562,498	8,266,690	67,805
Va.	21,353	-----	2,027,316	24,653,640	1,909,426	1,075,967	2,253,809	27,380
<b>TOTAL</b>	<b>281,870</b>	<b>11,432</b>	<b>31,646,827</b>	<b>746,804,063</b>	<b>5,060,309</b>	<b>5,042,152</b>	<b>44,128,981</b>	<b>539,996</b>

U.S. PUBLIC HEALTH SERVICE MAJOR DRAINAGE PROJECTS  
Up to June 30, 1942

State	Clearing or Brushing Acres	Channel or Ditch Cleaning, Lin.Ft.	New Ditching		Fill Cu.Yds.	Total Man Hours
			Lin.Ft.	Cu.Yds.		
Ala.*	15	7,000	8,200	3,711	---	20,956
N.C.	64	59,949	53,188	8,056	239	25,620
<b>TOTAL</b>	<b>79</b>	<b>66,949</b>	<b>61,388</b>	<b>11,767</b>	<b>239</b>	<b>46,576</b>

W.P.A. LARVICIDE PROGRAM

State	Period Covered		Larvicide Used		Larvicide Application		Clearing		Total Man Hours
			Oil Gal.	Paris Green Lb.	Ditches Lin. Ft.	Ponds Acres	Ditches Lin.Ft.	Pond Acre	
Fla.	1-24-42	3-7-42	8,819	6,360	123,200	416	29,675	39	15,769
Ill.	2-21-42	3-28-42	-0-	-0-	-0-	-0-	23,139	8	7,253
La.	2-14-42	4-18-42	33,578	127 (phenol)	1,818,960	2,845	-0-	0	16,488
Miss.	1-31-42	4-11-42	-0-	-0-	-0-	-0-	147,995	35	21,304
Texas	2-21-42	4-19-42	29,100	1,195	1,483,193	2,552	-	176	39,098

W.P.A. DRAINAGE PROJECTS

State	Clearing Streams Lin. Ft.	Ditching		Ditch Lining		Total Man Hours
		Lin. Ft.	Cu. Yds.	Lin. Ft.	Sq. Ft.	
Ala.	-----	28,345	55,906	1,690	-----	55,499
Fla.	-----	-----	-----	2,373	-----	54,319
Ill.	9,856	5,516	4,011	-----	-----	12,361
Ind.	121,745	50,037	10,734	---	-----	32,165
Ky.	115,881	27,638	3,589	---	-----	26,940
Miss.	41,691	32,702	81,675	20,133	194,281	147,628
N. C.*	44,000	-----	-----	---	-----	13,944
Okla.	-----	1,604	1,164	254	-----	7,772
S. C.	11,350	132,979	69,652	68,384	142,797	197,769
Tenn.	16,597	36,780	216,669	1,590	-----	69,124
<b>TOTAL</b>	<b>361,120</b>	<b>315,601</b>	<b>443,400</b>	<b>94,424</b>	<b>337,078</b>	<b>617,521</b>

\* Estimated

## II. ORIGIN

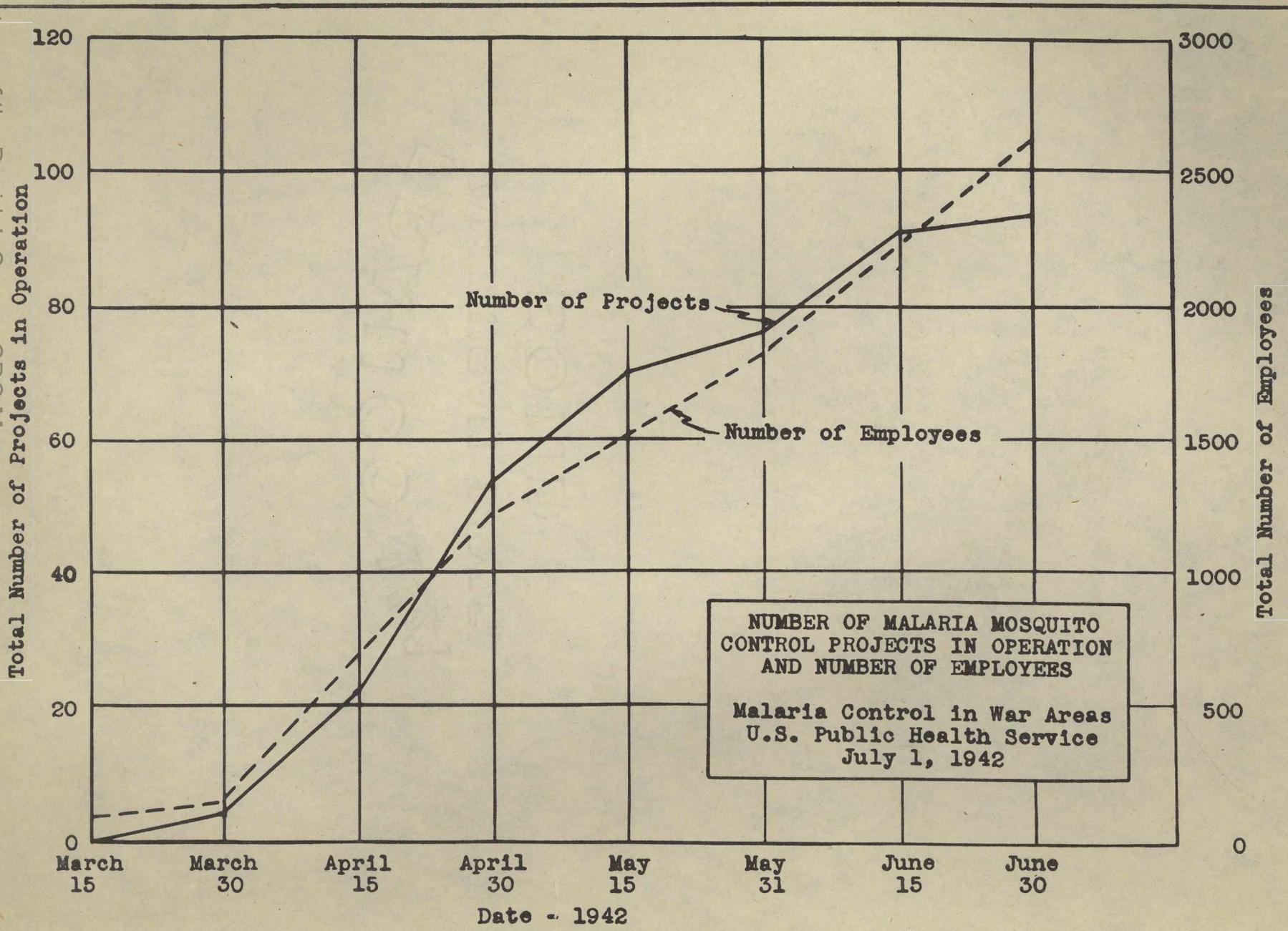
The presence of malaria in areas contiguous to military reservations, essential war industries, housing developments for workers employed on military reservations and in war industries, and in areas where large numbers of military personnel congregate outside of reservations, constitutes a serious threat to the war effort. Approximately 160 areas containing more than 600 military or essential war industrial establishments are located in the malarious regions of continental United States. The Army and Navy are responsible for the mosquito control activities within their reservations and are carrying on malaria control programs.

During the early stages of the defense program a number of malaria control projects were in operation under the auspices of state and local governments, the Tennessee Valley Authority, and various industries such as power companies. Much of the work sponsored by State and local governments was done with WPA labor. During 1941, the Public Health Service furnished technical and supervisory assistance on such projects and aided the States in extending malaria control work into as many defense areas as possible. Because of the uncertainty of the labor supply for such projects, this method of operation proved unsatisfactory in areas where large numbers of military personnel and essential industrial workers were concentrated.

## III. ACTIVITIES DURING FISCAL YEAR 1942

The office of Malaria Control in War Areas was established by Bureau orders of February 9, 1942. The general policies governing the program, the area to be covered, and the general plan of organization were outlined in Extra-Military Zone Circular Letter No. 3, dated April 27, 1942 (see Appendix C). Approximately \$1,400,000 was made available from Emergency Health and Sanitation funds for work during the fiscal year 1942. The office was given responsibility for the control of production of malaria mosquitoes in extra-military zones contiguous to war areas. Following discussions between representatives of the Public Health Service and various state Health Departments, the first actual control work was begun on March 17th.

The program has been expanded as rapidly as possible. By the end of the fiscal year the number of persons employed was about 2600. Malaria mosquito control projects were in operation in 93 areas including about 450 military establishments, industrial zones, housing and recreational centers for military and industrial personnel (see Appendix A). Entomological services were being furnished in several additional areas and actual control operations will be undertaken when and if the need is demonstrated. Figure 1 shows the rate of expansion in terms of the number of employees and the number of areas in which projects were in operation. Most of the projects have been limited to control of mosquito breeding by larvicidal operation, minor drainage, and clearing. Two major drainage projects using Public Health Service funds were in operation at the end of the fiscal year. This work does not supersede the established control work of other agencies, but aids in the protection of the health of war workers and military personnel in areas where such work might not otherwise be adequate.



NUMBER OF MALARIA MOSQUITO CONTROL PROJECTS IN OPERATION AND NUMBER OF EMPLOYEES  
Malaria Control in War Areas  
U.S. Public Health Service  
July 1, 1942

The programs of the Army and Navy within the military reservations are coordinated with the work of the Public Health Service in extra military areas. Reports on the progress and effectiveness of the work, drawn along similar lines, are exchanged.

At the urgent request of the Navy, and with the authorization of the Bureau of the Budget, the Public Health Service assisted in inaugurating a comprehensive program for the control of Aedes aegypti mosquitoes (dengue and yellow fever) on Key West, Florida. Actual control operations are being carried on by the State Health Department with the cooperation of the Navy, the Army, and the Public Health Service. Control work was started on June 1, with funds, personnel and equipment furnished by the Public Health Service, supplemented by the Florida Health Department and the Navy.

#### IV. PLANS FOR FISCAL YEAR 1943

The work is still expanding and on July 1 project proposals for the fiscal year 1943 had been received for 108 areas. Formal project proposals had not been received for 55 additional war areas where larvicidal work either was being done or would be started soon (see Appendix A). Still other areas will be brought under control as additional military establishments develop, but no accurate information on the number of such places is available to this office.

At the present time most of the larvicidal work is being done by men on foot using hand sprayers and dusters. During the fiscal year 1943 several power sprayers and dusters will be used on several projects where such equipment is essential for adequate control or more economical than hand equipment. Boats are being used in larvicidal work on a number of projects and airplane dusting will be inaugurated on certain projects during the fiscal year 1943. In some instances arrangements have been made for the use of military planes for this purpose and in others the service is being obtained by contract.

Plans for the use of labor crews during the winter months are being formulated. It is expected that, toward the end of the larvicidal season, men leaving the crews due to normal labor turnover will not be replaced. The remaining men probably will be used on essential drainage projects. In a few areas, larvicidal work will be a year-round activity.

#### Aedes aegypti Control

In addition to the project in operation on Key West, Florida, there is need for Aedes aegypti control at a number of cities along the Gulf coast and the southern Atlantic seaboard. There have been several cases of dengue in or near these places and the danger of the reintroduction of yellow fever is increased with increased air travel between this country and infected areas as a result of the war. Plans are being made to organize, train, and equip skeleton staffs at a few of these cities. No additional comprehensive control projects are planned at the present time. In the case of an outbreak of dengue or yellow fever, one of the skeleton staffs could be dispatched to

the affected area, the necessary additional workers hired, and a comprehensive control program begun quickly.

### Pest Mosquito Control

As stated in Extra-Military Zone Circular Letter No. 8, the functions of this office do not include pest mosquito control. The Army, Navy, and Maritime Commission have urgently requested that the Public Health Service undertake such work in a few selected areas where mosquitoes, principally salt-marsh breeders, are interfering seriously with the efficiency of military personnel and industrial workers. A budget has been prepared for control programs in a few of the more seriously affected areas. Final action is pending.

### Blood Index

To obtain accurate data on the incidence of malaria and to check on the effectiveness of control operations, plans have been made in cooperation with the State Health Departments to complete thick film surveys among school children during the fall in every war area where malaria is a hazard. Slides not examined by the states will be examined by technical personnel of this office, using the facilities of the USPHS Malaria Investigations Laboratory in Memphis. A few thousand slides were taken during the spring in a few of the most malarious states. The total number to be taken in the fall survey will be between 100,000 and 150,000.

### Educational Program

The malaria mosquito control operations of this office are confined to one-mile zones surrounding military or industrial establishments and towns, housing areas or recreational areas frequented by large numbers of troops or war workers. Rural areas of appreciable size which lie between zones of control operations in a given area are also frequented by troops and war workers but the cost of larvicidal operations throughout these rural areas would usually be prohibitive.

An effort is being made to reduce the endemic malaria reservoir in these rural areas by enlisting the support and assistance of the local residents to undertake for themselves such control measures as screening, adult killing, and incidental larvicidal operations. To achieve this, a community educational program is planned.

Twenty-six school teachers from as many counties in seven states have been hired as assistants in health education. Each person was recommended by the county health officer under whom he will work, and each recommendation was approved by the State Board of Health. The educators were assembled for a two-week intensive training course at the Malaria Investigations Station of the Public Health Service in Memphis, Tennessee, receiving a background in the facts of malaria and in the technics of community education. The program will be under administrative and technical supervision of Dr. Mayhew Derryberry, Chief of the Public Health Education Section of the Public Health Service, but the workers will be under the direct supervision

of the County Health Officer to whom they are assigned. They will cooperate with other personnel of the Office of Malaria Control in War Areas.

The educational program is on an experimental basis. The results of the work will be watched closely and the program probably will be expanded greatly next year if it is found justified.

#### V. ORGANIZATION PLAN

The preliminary organization of the headquarters office was established to permit functions essential to the inauguration and initial operation of the program to be expedited and executed, and to facilitate administrative changes planned to go into effect at the beginning of the fiscal year 1943. Because of the large number of detailed studies necessary to evolve simple and practical fiscal and personnel procedures the assignments of Headquarters staff members were made very flexible. To insure a uniform field procedure for recruiting and appointing project personnel, conferences were held with representatives of the Civil Service District Offices concerned and proper methods evolved. Instructions on administrative and technical procedures were issued by the headquarters office, in the form of serially issued Manual Letters, to field and other personnel connected with the malaria control program. These letters, included under Appendix C, constitute the Manual of Operations, a flexible operating guide which can be revised, or supplemented when necessary. State Health Departments and Public Health Service Districts were charged with distributing these instructions to personnel under their jurisdiction.

In order to minimize complications incidental to the reorganization, certain functions, such as administrative responsibility for personnel and equipment assigned to the Districts under the previous mosquito control work, have remained essentially the same during the fiscal year 1942. Such changes as were considered administratively expedient are being made on July 1. Figure 2 presents the organization plan in effect on July 1, 1942. The changes necessary to effect this plan are incorporated in the Manual Letters.

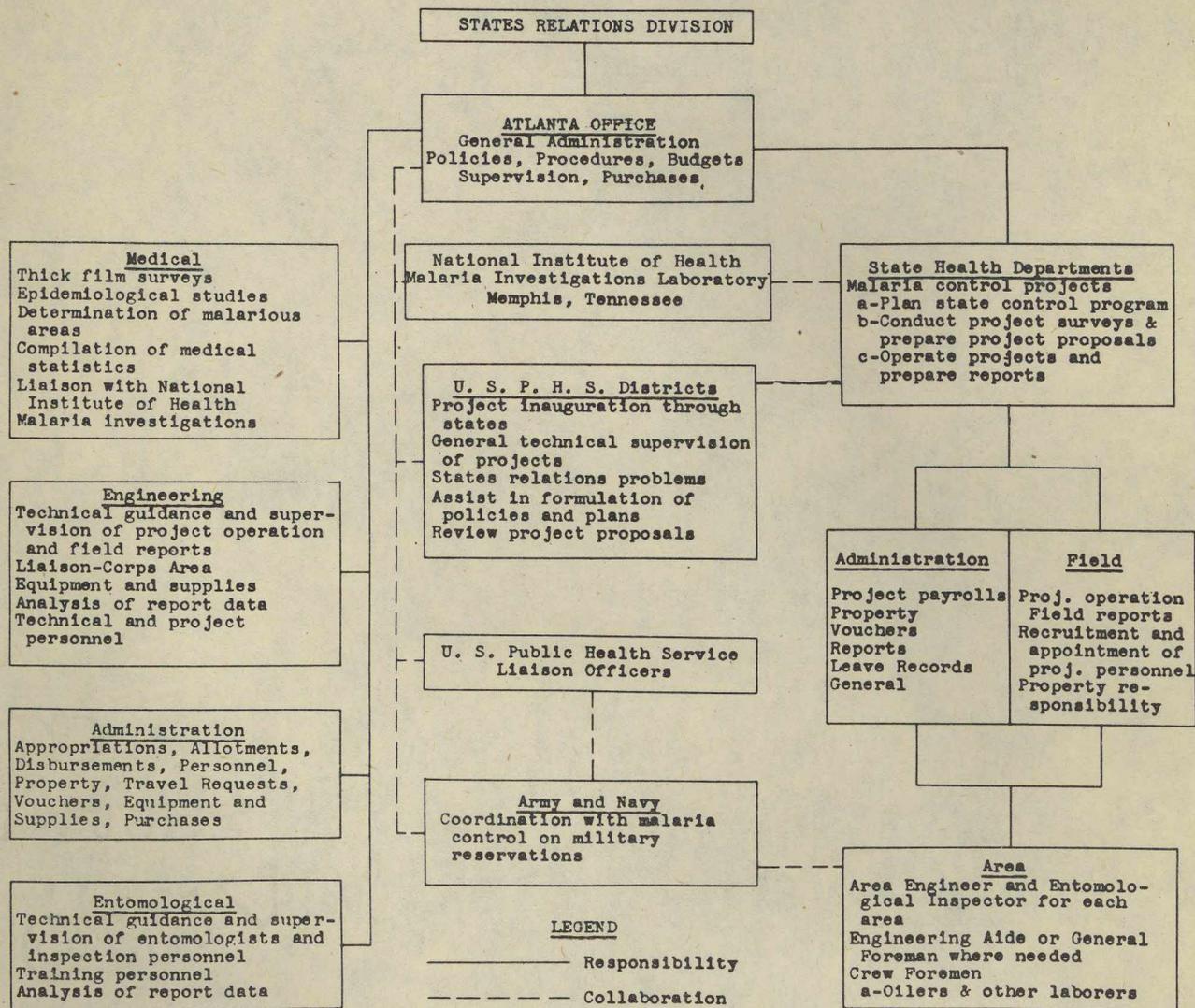
The broad functions of the Headquarters, District, and State Offices are as outlined in Extra-Military Zone Circular Letter No. 8 (Appendix C). Collaboration and cooperation between the District and State offices is both encouraged and expected. They exercise autonomy within limits consistent with the discharge of the responsibilities placed in the Headquarters office. Functions which may come under this classification are the survey, planning, and operation of projects by the state health departments and general supervision by the District Offices. Supplemental technical, administrative, clerical and other assistance which may be necessary will be furnished by the Headquarters office and any personnel assigned for these purposes will be stationed at the office to which detailed, except for a small group which is used in the overall operation of the program.

A discussion of the specific administrative functions of the Headquarters, District and State offices is given in Appendix B.

ORGANIZATION AND ACTIVITIES CHART

MALARIA CONTROL IN WAR AREAS

JULY 1, 1942



STATES AND PUBLIC HEALTH SERVICE DISTRICTS INVOLVED IN MALARIA CONTROL IN WAR AREAS AND NUMBER OF WAR ESTABLISHMENTS PROTECTED UNDER PROJECTS FOR FISCAL YEARS 1942 and 1943

■ Protected at end of Fiscal Year 1942

□ To be protected during Fiscal Year 1943

Dist.	State	Number of War Establishments				Dist.	State	Number of War Establishments			
		20	40	60	80			20	40	60	80
2	Dist. of Col.	10	10	10	10	4	Georgia	10	10	10	10
2	North Carolina	10	10	10	10	4	Louisiana	10	10	10	10
2	Virginia	10	10	10	10	4	Mississippi	10	10	10	10
3	Illinois	10	10	10	10	4	South Carolina	10	10	10	10
3	Indiana	10	10	10	10	4	Tennessee	10	10	10	10
3	Kentucky	10	10	10	10	7	Arkansas	10	10	10	10
4	Alabama	10	10	10	10	7	Missouri	10	10	10	10
4	Florida	10	10	10	10	7	Oklahoma	10	10	10	10
						9	Texas	116	152		

## VI. FIELD OPERATIONS

### Area

The basic unit for malaria control operations is an area comprising one or more war zones (military, industrial, housing, or recreational) grouped for effective supervision of the control work. The areas therefore do not necessarily conform to local political subdivisions. Although they vary greatly in size, a typical one might comprise about 25 square miles and several war zones or establishments.

### Personnel

An area engineer is in direct charge of the entire malaria control program in each area. In the larger areas, the engineer may have one or more engineering aides as assistants.

The labor crews which do the actual control work are in charge of a foreman and usually include from four to about eight laborers. The foreman reports directly to the area engineer in the smaller areas and to one of the aides or to a general foreman where the number of crews is too large for efficient supervision by the area engineer directly. As a rule, the foreman and laborers are selected by the area engineer using the local U.S. Employment Offices for recruiting. All of these men are hired on an annual basis through Civil Service procedures. Many of the foremen and some of the laborers have had previous experience in malaria control work and are particularly valuable to the program. Labor turnover is relatively rapid.

### Entomological Inspection

Entomological inspectors work under the technical supervision and guidance of entomologists assigned to each state Health Department under general direction of Headquarters office. One or more inspectors are assigned to each of the larger projects. In a few cases one inspector serves in more than one area and on some of the smaller projects, the area engineer makes entomological inspections. It is the duty of the inspector:

1. To locate, establish, and operate larval collecting stations in each breeding area as a check on the need for or the efficiency of larvicidal operations;
2. To locate, establish, and operate light traps and natural resting stations for the collection of adult mosquitoes to determine the density of anophelines in the vicinity of the war zones as a check on the overall efficiency of control;
3. When the results of the larval and adult catches indicate the existence of uncontrolled breeding, to locate the new areas where control is necessary.

The entomological inspection service is coordinated closely with the actual control activities. The inspector notifies the area engineer

immediately of his findings so that no delay occurs in applying control if new breeding locations are found, or if it is determined that existing control is inadequate at certain points.

### Project Activities

Larvicide and Minor Drainage - Periodic application of larvicide to breeding areas is the principal method of control used in the program. A larvicidal project ultimately will be operated in each war area where malaria is a hazard to the war effort. No. 2 Diesel fuel oil is the most extensively used larvicide. Paris green also is used in areas where local conditions are suitable and in a few cases pyrethrum larvicide is used.

Where it is economical to eliminate minor mosquito breeding areas by drainage with hand labor, such work is considered a normal function of the larvicidal program. It is often found that considerable mosquito breeding water surface can be eliminated by minor ditching operations or by cleaning and repairing previously constructed ditches. By combining minor drainage and clearing with the larvicidal program the project labor can be used most effectively and the amount of larvicide necessary can be reduced appreciably.

Major Drainage and Clearing - In certain areas major drainage projects are an essential part of the program. The Work Projects Administration is carrying on some drainage projects in war areas and the fullest use will be made of its resources for this type of work. Technical supervision of W.P.A. mosquito control drainage projects in war areas will be provided through the Public Health Service.

Major drainage projects are initiated by the Public Health Service where they are necessary for adequate control or where they are appreciably more economical than larvicidal control. Competition for essential industrial and agricultural labor is avoided. The projects are so designed that they may be expanded or contracted with the seasonal labor supply. There are no restrictions on the use of machinery. Major drainage projects are classified as follows: (See Manual Letter No. 1, Appendix C):

- Class A - Projects in areas where drainage is necessary for adequate control. (Where the resources of the W.P.A. are insufficient to operate this type of drainage project, work will be done with the Public Health Service funds).
- Class B - Projects in areas where larvicidal control is adequate but expensive, drainage being considerably more economical. (Where W.P.A. resources are insufficient and where labor and personnel are available this type of project will be operated with Public Health Service funds).
- Class C - Projects in areas where drainage is part of the long-range control program but where larvicidal control is adequate and more economical from the standpoint of protection of the war effort.

(It is improbable that Public Health Service funds will be used for drainage projects falling in this classification).

### Progress Reports

The amount of reporting required has been reduced to a minimum consistent with efficient administration in order to permit the area engineer to devote as much time as possible to field supervision of control activities.

Larvicidal and Minor Drainage reports are submitted bi-weekly by the area engineer. These are on a standard form and show the number of man-hours used on each of the various types of project activities as well as the amount of each type of work accomplished.

Major Drainage and Clearing reports will be submitted bi-weekly by the engineer in charge of the project. This report also will be on a standard form and will provide data on the amount of each type of work done and the number of man hours and machine hours used in accomplishing the work.

It is expected that these reports will provide a valuable and ready check on project operation and progress and will be valuable in estimating the cost of future projects. Sample forms for these reports are included in Appendix C. Reports on W.P.A. drainage projects in war areas are now being forwarded to this office for tabulation and analysis.

## VII. EQUIPMENT AND SUPPLIES

### Motor Vehicles

One-half ton and  $1\frac{1}{2}$  ton trucks are used as utility vehicles for crew transportation and for carrying equipment and supplies. In some cases, area engineers have been assigned passenger cars or station wagons for use in supervising the work.

In addition to trucks previously owned by the Public Health Service and assigned to malaria control activities, trucks and other vehicles have been purchased by the Headquarters Office. A number of trucks have recently been obtained by transfer from other federal agencies but there is still an acute shortage of automotive equipment. Efforts are being made to obtain additional vehicles because at present it is necessary to operate projects with inadequate transportation facilities. It is necessary in some cases to stagger the working hours of the various crews in order to provide transportation for men and material to and from operating stations.

Special attention is devoted to obtaining storage facilities for automotive equipment in order to protect against theft of tires and to prevent excessive deterioration of vehicles which may be irreplaceable. The State health departments and city and county governments have been particularly helpful in arranging for such facilities.

At present 338 trucks and other motor vehicles are in operation. Effective control operations demand a minimum of about 450 vehicles, based on present approved projects for fiscal year 1943. Approximately 550 are needed to operate the projects at peak of efficiency. Further expansion, which can be anticipated, will require an additional 100 trucks and cars.

#### Other Equipment

Quantity purchases of sprayers, dusters, shovels, picks, mattocks, and other tools and equipment have been made and supply warehouses have been established at Atlanta, Georgia and New Orleans, Louisiana. Where possible, surplus tools and equipment have been obtained from the Work Projects Administration. Tools which are urgently needed and can be purchased locally are bought through emergency purchase procedures by the area engineers. Through this arrangement it has been possible to provide for tool and equipment needs within the limits of the supply. Local storage facilities are arranged for by the area engineer and a system of checking tools in and out has been established.

The supply of small hand tools such as shovels, picks, mattocks, etc., is generally adequate and little difficulty is anticipated in supplying project requirements this season. Some difficulty is experienced in obtaining sprayers and dusting machines, due to priority requirements.

At the present time priorities have been obtained for enough equipment to satisfy most of the immediate project demands, but the equipment has not been delivered.

#### Larvicide

During the fiscal year 1942, most of the larvicidal oil was purchased through state funds since Treasury Procurement Division contracts were not set up for this purpose. Where necessary, emergency purchases have been made locally. It is expected that during fiscal year 1943, T.P.S. contracts for larvicidal oil will become effective providing for the purchase of oil as needed on the project through Public Health Service funds. Anticipated needs for fiscal year are 6,000,000 - 7,000,000 gallons. New war zones which are established after the contracts are awarded and which need oil will be supplied by extending existing contracts or awarding supplementary contracts.

Approximately 100 tons of Paris green will be needed during the fiscal year providing the oil supply is adequate. If oil cannot be obtained as needed, larger amounts of Paris green will be required. 16,000 gallons of Standard No. 20 pyrethrum extract have already been purchased. More may be needed if additional Aedes aegypti control work is done or if pest mosquito control work is undertaken in selected areas.

All of these larvicides are "critical" materials. Considerable difficulty has been experienced in obtaining adequate oil supplies along the eastern seaboard. Paris green contains arsenic and copper and the supplies of both are subject to strict control. Pyrethrum supplies have been "frozen" and are subject to allocation.